

**1. Amendments to the Claims:**

A clean version of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR § 1.121(c)(3). This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (Currently amended) A method of manufacturing a device having a magnetic layer-structure, the method comprising:

forming the magnetic layer-structure;  
heating the magnetic layer-structure with an electric current, the electric current comprising a current pulse having a duration such that no substantial heat transfer from the magnetic layer-structure to an environment of the magnetic layer-structure takes place, so that a temperature of the environment before and after the current pulse is substantially the same; and

selecting a physical process of a plurality of physical processes having corresponding activation energies in the magnetic layer-structure based on the current pulse, a duration and an amplitude of the current pulse being adapted to an activation energy of the selected physical process.

2. (Previously presented) The method as claimed in claim 1, wherein the heat is transferred by means of heat conduction.

3. (Previously presented) The method as claimed in claim 1, wherein selecting the physical process in the magnetic layer-structure comprises selecting a layer physical process in one magnetic layer of the magnetic layer-structure, based on the duration and amplitude of the current pulse.

4. (Previously presented) The method as claimed in claim 1, wherein selecting the physical process comprises increasing the amplitude and decreasing the pulse duration of the current pulse.

5. (Previously presented) The method as claimed in claim 1, wherein the electric current comprises a sequence of current pulses, which is applied without substantial heat transfer from the magnetic layer-structure to the environment.

6. (Previously presented) The method as claimed in claim 1, wherein the device comprises a magnetoresistive device.

7. (Previously presented) The method as claimed in claim 6, herein the device is a sensing device.

8. (Previously presented) The method as claimed in claim 1, wherein the magnetic layer-structure comprises at least one bias layer, the method further comprising:

applying a magnetic field to the at least one bias layer during the current pulse; and  
switching off the magnetic field after a temperature of the bias layer decreases to below Néel or Curie temperature.

9. (Previously presented) A method of manufacturing a magnetoresistive sensor device having a magnetic layer-structure, the method comprising:

forming the magnetic layer-structure; and  
heating the magnetic layer-structure with an electric current, the electric current comprising a current pulse having a duration that prevents substantial heat transfer from the magnetic layer-structure to an environment of the magnetic layer-structure, so that a temperature of the environment before and after the current pulse is substantially the same,  
wherein the magnetic layer-structure comprises a first bias layer having a first antiferromagnetic material with a first blocking temperature and a second bias layer having a

having a second antiferromagnetic material with a second blocking temperature different from the first blocking temperature, a magnetization direction of the first or second antiferromagnetic material having the higher blocking temperature being set before a magnetization direction of the first or second antiferromagnetic material having the lower blocking temperature is set.

10. (Previously presented) The method as claimed claim 1, wherein a duration of the current pulse is shorter than 100 ms.

11. (Previously presented) The method as claimed in claim 8, wherein the device is included in a magnetic system having a plurality of magnetoresistive devices.

12. (Previously presented) The method as claimed in claim 11, wherein the magnetic system comprises at least four magnetoresistive devices, arranged in a Wheatstone bridge configuration.

13. (Previously presented) A method of manufacturing a magnetoresistive bridge device of a magnetic system comprising a plurality of magnetoresistive bridge devices, the method comprising:

forming a magnetic layer-structure; and

heating the magnetic layer-structure with an electric current, the electric current comprising a current pulse having a duration that prevents substantial heat transfer from the magnetic layer-structure to an environment of the magnetic layer-structure, so that a temperature of the environment before and after the current pulse is substantially the same,

wherein the current pulse is applied for offset compensation by irreversibly changing a resistance of at least one of the magnetoresistive bridge devices through local heating.

14-15. (Cancelled)